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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/783,548	02/20/2004	Mark L. La Forest	H0005333-1160	7427
128 7590 05/22/2007 HONEYWELL INTERNATIONAL INC. 101 COLUMBIA ROAD P O BOX 2245 MORRISTOWN, NJ 07962-2245			EXAMINER WOLLSCHLAGER, JEFFREY MICHAEL	
			ART UNIT 1732	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/783,548

Applicant(s)

FOREST ET AL.

Examiner

Jeff Wollschlager

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 February 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 and 16-19 is/are pending in the application.
- 4a) Of the above claim(s) 1-6 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7-14 and 16-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

Applicant's amendment to the claims filed on February 28, 2007 has been entered. Claims 16 and 19 are currently amended. Claim 15 has been canceled. Claims 1-6 remain withdrawn from further consideration. Claims 7-14 and 16-19 are under examination.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 7-18 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-20 of U.S. Patent No. 6,537,470 in view of Johnson (U.S. Patent 5,045,251). Although the conflicting claims are not identical they are not patentably distinct from each other.

Claims 1 and 2 of U.S. Patent 6,537,470 claim the basic claimed process of rapid resin or pitch transfer molding comprising placing a porous preform into a mold, the preform at a temperature above a melting point of a resin or pitch and means for containing the mold wherein the mold comprises a top half, a bottom half opposed to the top half so that the top half and the bottom half form a mold cavity, at least one gate disposed in the top half or bottom half, a valve to admit resin or pitch, and an arrangement for venting and/or providing vacuum to the mold; injecting a resin or pitch to effect impregnation and allowing the resin to cool below the melting point and removing the preform from the mold.

Regarding claim 7, claims 1 and 2 of the '470 claim the process described above, but do not expressly claim a plurality of gates/melt supply channels to effect the impregnations. However, Johnson, teaches that it is conventional in the art of resin transfer molding to employ multiple inlet ports in rapid resin cure applications in order to reduce the flow distances (col. 1, lines 52-54). Therefore it would have been obvious to one having ordinary skill in the art at the time of the claimed invention to employ a plurality of gates/melt channels in the top and bottom of the mold in the process of claims 1 and 2 of the '470 patent in order to reduce the distance of travel of the rapidly curing resin.

Regarding claims 8-18, claims 3-20 of the '470 patent substantially duplicate the claimed subject matter of these claims.

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Claim 19 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-20 of U.S. Patent No. 6,537,470 in view of Johnson (U.S. Patent 5,045,251) and either of Barron et al. (US 6,030,575) or Gautier (US 5,567,509). . Although the conflicting claims are not identical they are not patentably distinct from each other.

Regarding claim 19, the '470 patent claims the method as set forth above, but does not claim an air, water or mist flash cooling system to cool the preform. However, Gautier discloses a method of making a preform including vacuum cooling (col. 5, lines 5-14) and Barron et al. disclose a method of making a preform wherein air flowing through the mold under vacuum affects rapid cooling (col. 8, lines 50-62; col. 11, lines 57-65). It would have been obvious to one having ordinary skill in the art at the time of the claimed invention to have employed a flash cooling system such as is disclosed by either of Gautier or Barron et al. for the purpose, as suggested by Barron et al., of cooling the preform more rapidly

Claims 7-18 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 5-17 of U.S. Patent No. 7,025,913. Although the conflicting claims are not identical they are not patentably distinct from each other.

Claims 5 and 6 of U.S. Patent 7,025,913 claim the basic claimed process of rapid resin or pitch transfer molding comprising placing a porous preform into a mold, the preform at a temperature above a melting point of a resin or pitch and means for

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containing the mold wherein the mold comprises a top half, a bottom half opposed to the top half so that the top half and the bottom half form a mold cavity, a pair of valves in the top and bottom half of the mold to admit resin, and an arrangement for venting and/or providing vacuum to the mold; injecting a resin or pitch to effect impregnation and allowing the resin to cool below the melting point and removing the preform from the mold.

Regarding claim 7, claims 5 and 6 of the '913 patent claim the process described above, but do not claim the mold cavity is annular. However, the selection of the shape of the mold cavity would have been readily chosen by and obvious to the ordinarily skilled artisan in order to achieve the production of an intended product.

Regarding claims 8-18, claims 7-17 of the '490 patent substantially duplicate subject matter.

Claims 19 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 5-17 of U.S. Patent No. 7,025,913 in view of either of Barron et al. (US 6,030,575) or Gautier (US 5,567,509). Although the conflicting claims are not identical they are not patentably distinct from each other.

Regarding claim 19, the '913 patent claims the method as set forth above, but does not claim an air, water or mist flash cooling system to cool the preform. However, Gautier discloses a method of making a preform including vacuum cooling (col. 5, lines 5-14 and Barron et al. disclose a method of making a preform wherein air flowing through the mold under vacuum affects rapid cooling (col. 8, lines 50-62; col. 11, lines

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57-65). It would have been obvious to one having ordinary skill in the art at the time of the claimed invention to have employed a flash cooling system such as is disclosed by either of Gautier or Barron et al. for the purpose, as suggested by Barron et al., of cooling the preform more rapidly.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 7-14 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wood et al. (U.S. Patent 6,537,470 or WO 02/18120) in view of Johnson (U.S. Patent 5,045,251).

Regarding claim 7, Wood et al. teach a process of rapid resin or pitch transfer molding comprising placing a porous preform into a mold wherein the preform is at a temperature above a melting point of a resin or pitch and means for containing the mold wherein the mold comprises a top half, a bottom half opposed to the top half so that the top half and the bottom half form a mold cavity, at least one gate disposed in the top half or bottom half, a valve to admit resin or pitch, and an arrangement for venting and/or providing vacuum to the mold; injecting a resin or pitch to effect impregnation and allowing the resin to cool below the melting point and removing the preform from the mold wherein the mold cavity is annular and the top and bottom half include an annular groove (Figure 5, 6 and 10; col. 4, lines 24-32; col. 8, lines 59-62; col. 9, lines 1-col. 10, lines 27). Wood et al. do not disclose a plurality of melt channels in the top and bottom half (example: Figure 10). However, Johnson teaches that it is conventional in the art of resin transfer molding to employ multiple inlet ports in rapid resin cure applications in order to reduce the flow distances (col. 1, lines 52-54).

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have employed a plurality of gates/melt channels in the top and the bottom of the mold while practicing the method disclosed by Wood et al., in view of Figure 10 for example in the patent to Wood et al., as taught and suggested by Johnson in order to reduce the distance the rapidly curing resin needed to travel.

As to claim 8, Wood et al. disclose the claimed materials (col. 20, lines 3-7).



As to claim 9, Wood et al. disclose the preform is a porous carbon body (col. 20, lines 19-21).

As to claim 10, Wood et al. disclose the preform may be used as a brake disc in an aircraft (col. 11, line 20).

As to claims 11 and 12, Wood et al. disclose the claimed temperatures (col. 20, lines 26-31).

As to claim 13, Wood et al. disclose the same claimed resins or pitch (col. 20, lines 32-39).

As to claim 14, Wood et al. place multiple preforms in a single mold (Figures 3, 9, and 10).

As to claim 16, Woods et al. oxidize and carbonize the preform at the claimed temperature (col. 20, lines 43-58).

As to claim 17, Wood et al. employ CVD/CVI or resin transfer molding (col. 20, lines 59-62).

As to claim 18, Wood et al. employ a vacuum (col. 20, lines 63-65).

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wood et al. (U.S. Patent 6,537,470 or WO 02/18120) in view of Johnson (U.S. Patent 5,045,251) and further in view of either of Barron et al. (US 6,030,575) or Gautier (US 5,567,509).

Regarding claim 19, Wood et al. teach a process of rapid resin or pitch transfer molding comprising placing a porous preform into a mold wherein the preform is at a temperature above a melting point of a resin or pitch and means for containing the mold

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wherein the mold comprises a top half, a bottom half opposed to the top half so that the top half and the bottom half form a mold cavity, at least one gate disposed in the top half or bottom half, a valve to admit resin or pitch, and an arrangement for venting and/or providing vacuum to the mold; injecting a resin or pitch to effect impregnation and allowing the resin to cool below the melting point and removing the preform from the mold wherein the mold cavity is annular and the top and bottom half include an annular groove (Figure 5, 6 and 10; col. 4, lines 24-32; col. 8, lines 59-62; col. 9, lines 1-col. 10, lines 27). Wood et al. do not disclose a plurality of melt channels in the top and bottom half (example: Figure 10). Wood et al. also do not disclose an air, water or mist flash cooling system.

However, Johnson teaches that it is known in the art of resin transfer molding to employ multiple inlet ports in rapid resin cure applications in order to reduce the flow distances (col. 1, lines 52-54), Gautier discloses a method of making a preform including vacuum cooling (col. 5, lines 5-14) and Barron et al. disclose a method of making a preform wherein air flowing through the mold under vacuum affects rapid cooling (col. 8, lines 50-62; col. 11, lines 57-65).

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have employed a plurality of gates/melt channels in the top and the bottom of the mold while practicing the method disclosed by Wood et al., in view of Figure 10 for example in the patent to Wood et al., as taught and suggested by Johnson in order to reduce the distance the rapidly curing resin needed to travel. Further, it would have been obvious to one having ordinary skill in the art at the

time of the claimed invention to have employed a flash cooling system such as is disclosed by either of Gautier or Barron et al. for the purpose, as suggested by Barron et al., of cooling the preform more rapidly

### ***Response to Arguments***

Applicant's arguments filed on February 28, 2007 regarding the 35 USC 103(a) rejection of claims 7-18 have been fully considered, but they are not persuasive. Applicant's arguments regarding claim 19 are moot in view of the amendment to the claim. Applicant's arguments regarding the double patenting rejection over US 6,939,490 have been fully considered and they are persuasive.

As a preliminary matter, applicant requested clarification regarding the utilization of both US 6,537,470 and WO 02/18120 in the rejection of the claims stating that both references appear to contain the same subject matter. The examiner agrees. The '470 patent was cited because the reference was provided in the IDS and because a double patenting rejection was made over the '470 patent. The WIPO document was cited because it has a 35 USC 102(b) prior art date.

#### **Applicant's arguments appear to be on the following grounds:**

1. The disclosure by Johnson regarding multiple inlet ports does not disclose melt supply channels disposed in the top half and in the bottom half of the mold as required in the claims. Accordingly, both the 35 USC 103(a) and the double patenting rejection of the claims in view of the Johnson reference should be withdrawn.

2. The examiner has shown no motivation or reason to reduce the flow distances in the primary reference.

3. The double patenting rejection over the '913 patent fails to address a plurality of melt supply channels.

The arguments are not persuasive for the following reason:

1. Referring to Figures 9 and 10 in the '470 patent, showing a plurality of preforms, the examiner notes that the resin/pitch enters from the bottom of the mold through gate (54) and flows through the mold as shown by the arrows. The '470 patent discusses that infiltration by the resin transfer molding method as compared to other methods such as CVD is more rapid (col. 11, lines 40-42), that the method provides efficient distribution of the resin throughout the preform and that dry pockets caused by incomplete impregnation can be avoided (col. 3, lines 45-col. 4, lines 32). The examiner further notes that element (50) represents the top mold surface and element (49) represents the bottom mold surface and that the '470 patent claims "at least one gate disposed in the top half or bottom half" of the mold (claim 2). Johnson discloses employment of multiple inlet ports to reduce the distance the rapidly curing resin must travel (col. 1, lines 52-55) in resin transfer molding methods.

In view of Figures 9 and 10, the goals stated in the '470 patent, and the disclosure by Johnson of employing multiple inlet ports, the examiner maintains that the combination would have suggested to one having ordinary skill in the art at the time of the invention to have employed inlets through both the top and bottom of mold surfaces (50) and (49) in order to reduce the distance traveled by the resin before reaching the

plurality of preforms. These inlets would form channels through the thickness of the top and bottom mold surfaces.

2. The examiner notes that the motivation to combine the references is provided by Johnson in that “due to the rapid resin cure flow distances are limited and for longer flow distances multiple inlet ports may be required” (col. 1, lines 52-55, emphasis added). The statement suggests and implies the negative impact of such rapid curing resin flowing distances longer than needed: inadequate impregnation, line plugging, excessive pressure drop through the system and longer impregnation times.

3. Claim 6 of the '913 patent claims “a pair of valves wherein the valves can admit resin or pitch into melt supply channels in the top half and the bottom half of the mold”. The examiner maintains that the rejection is proper.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Wollschlager whose telephone number is 571-272-8937. The examiner can normally be reached on Monday - Thursday 7:00 - 4:45, alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on 571-272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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JW

Jeff Wollschlager

Examiner

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May 17, 2007

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SUPERVISORY PATENT EXAMINER  
5/21/07